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every breath counts

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No effect of low-intensity endurance exercise on muscle necrosis in the diaphragm of mdx mice

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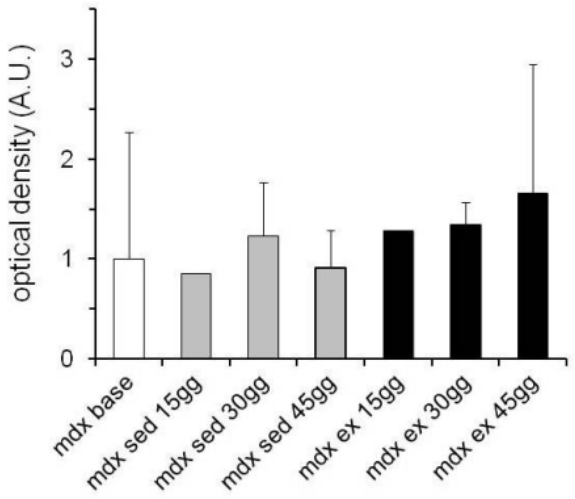
Duchenne muscular dystrophy (DMD) is characterized by progressive skeletal muscle weakness. We have previously shown that low-intensity endurance training prevented muscle damage (Frinchi et al, Int J Sports Med 2014). Since the effects of low-intensity endurance training on the the diaphragm in the mdx mouse model are unknown, in the same animals we investigated Cx39 protein levels (Western blotting) in homogenates of the diaphragm before and after training. Mdx and wild-type (WT) mice were randomly assigned to sedentary (mdx-S, n=17; WT-S, n=19) or trained (mdx-EX, n=14; WT-EX, n=16) groups. Low-intensity endurance training (running on a wheel) was done 5 days/week for 6 weeks at progressively increasing time (15 min to 1 h) and speed (rpm from 16 to 24, distance covered during training sessions from 48 to 288 m). Compared to our previous analysis of skeletal muscles changes in gastrocnemius and quadriceps, showing decreased muscle damage in trained vs sedentary mdx mice, analysis of protein level of Cx39 showed similar values in diaphragm homogenates from sedentary and trained mdx mice.



These preliminary data suggest that prevention of muscle necrosis after mild training does not occur in the diaphragm. As a speculation, continuous work of diaphragm vs intermittent work of skeletal muscle might at least partly account for the different results obtained in respiratory and locomotor muscle.